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Superfund Record of Decision (EPA Region 5): Alsco Anaconda, OH (First Remedial Action), September 1989

(U.S.) Environmental Protection Agency, Washington, DC

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Superfund Record of Decision:

Alsco Anaconda, OH

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Alsco Anaconda site is a 4.8-acre former sludge disposal area in Gnadenhutten, Tuscarawas County, Ohio. The site lies within the Tuscarawas River's 50- and 100-year floodplains and neighbors the Alsco Anaconda aluminum manufacturing plant which has operated since 1948. Contamination at the site occurred from 1965 to 1978 when wastewater and wastewater treatment sludge from the plant, containing hazardous aluminum processing wastes (F019), was disposed of in an unlined settling basin and a sludge pit. In 1978 the plant owners began dewatering the treatment sludge prior to disposal of sludge offsite in the settling basin and a former swamp area. This Record of Decision (ROD) is the first of two operable units at the site and addresses remediation of the contaminated soil and sludge. Because leachate from the sludge may have contaminated the ground water and surface water, a subsequent ROD will address the appropriate remedial action for those media. The primary contaminants of concern affecting the soil and sludge are organics including PCBs, and metals including chromium, cyanide, and arsenic.

The selected remedial action for this site includes excavating 50 cubic yards of sludge contaminated with greater than 500 mg/kg of PCBs followed by offsite incineration and disposal; excavating 8,820 cubic (See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision - Alsco Anaconda, OH
First Remedial Action
Contaminated Media: soil, sludge
Key Contaminants: organics (PCBs), metals (chromium, arsenic)

b. Identifiers/Open-Ended Terms

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First Remedial Action

16. Abstract (continued)

yards of aluminum processing waste sludge and underlying soil from the settling basin and sludge pit contaminated with less than 500 mg/kg of PCBs followed by offsite treatment and disposal or reuse; backfilling and revegetating excavated areas; and implementing institutional controls including site access and deed restrictions. The estimated capital cost for this remedial action is $4,161,066 with no associated O&M costs.

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Alsco Anaconda Site
Gnadenhutten, Ohio

STATEMENT OF BASIS AND PURPOSE

This decision document presents the United States Environmental Protection Agency's (U.S. EPA's) selected remedial action for the source material operable unit at the Alsco Anaconda site located in Gnadenhutten, Ohio. This decision document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the National Contingency Plan (NCP). This decision is based on information and documents contained in the administrative record for this site. The attached index identifies the items that comprise the administrative record upon which the selection of the remedial action is based.

The State of Ohio concurs on the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This operable unit is the first of two operable units planned for the site. This action addresses the source material consisting of contaminated sludge and soil. The second planned activity will address contaminated ground and surface water. This action proposed for the source material will contribute to the overall strategy for the site as it will remove and treat the principal direct contact threat to humans, eliminate the threat of release of contaminated material to the river, and will no longer contribute contaminants to the groundwater.

The major components of the selected remedy include:

- Excavation of approximately 50 cubic yards of sludge contaminated with greater than 500 milligrams per kilogram (mg/kg) of polychlorinated biphenyls (PCBs) and transportation off site for treatment to a facility permitted to incinerate PCB waste; and

- Excavation of approximately 8,820 cubic yards of remaining sludge and underlying soil, which includes sludge contaminated with less than 500 mg/kg of PCBs, to levels meeting clean closure requirements for treatment and disposal at an off-site facility in compliance with the

CERCLA off-site policy (approved facility) or a reclamation/reuse facility.

- Backfill selected areas, and recontour and vegetate any excavated or cleared areas; maintain the present security fence; and notice of the remedial action recorded with the property deed.

STATUTORY DETERMINATIONS

The selected remedy for the source material operable unit is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative (or resource recovery) technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment to reduce toxicity, mobility, or volume as a principal element.

Because this remedy does not address contaminated ground water, hazardous substances are remaining on-site. Consequently, U.S. EPA will review the remedy, no less than once every five years after commencement of the remedial action, to ensure that the remedy continues to provide adequate protection of human health and the environment. The necessity of continuing the five-year review will also be evaluated after the selection of the remedial action for the ground and surface water operable unit.

Frank M. Covington SEP 0 8 1989

for Valdas V. Adamkus, Regional Administrator
U.S. Environmental Protection Agency, Region V

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The 4.8 acre Alsco Anaconda site is located approximately forty-nine miles south of Akron, Ohio within the Gnadenhutten village limits. Gnadenhutten, a community of about 1,320 residents, is located within Clay Township in Tuscarawas County, along the flood plain of the Tuscarawas River. The Alsco Anaconda site is bounded by the Penn-Central Railroad right-of-way, the Alsco manufacturing building and parking lot, Anaconda Drive (County Road 39), and the Tuscarawas River on the northwest, northeast, southeast, and southwest respectively. This approximately 4.8-acre area, including the settling basin (consisting of the northern and southern impoundments), sludge pit, a former swamp area, and adjacent land up to the river constitute the Alsco Anaconda National Priorities List (NPL) site. See site map (Figure 1).

Both land and water resources are used by individuals and local industries. Natural resource development activities include farming, mining of coal, clay, sand and gravel, and drilling of oil and gas wells. The Tuscarawas River is used for recreation as well as for industrial and agricultural water supplies.

Subsurface materials in the Tuscarawas River valley consist of unconsolidated fluvial silt and sand deposits, along with glacial outwash sands, silts, and gravels. This valley fill overlies relatively flat-lying sedimentary bedrock, mostly shale and sandstone with minor beds of limestone and coal, generally occurring greater than 160 feet below the site surface. The surficial deposits of sand and gravel and bedrock formations of shale, limestone, and coal are mined locally as economic resources. Within a two- mile radius of the site, there are several sand and gravel pits in the valley with clay and coal strip mines in the valley sides.

The unconsolidated alluvial valley deposits form extensive aquifers which are the principal water supplies for municipalities in the valley. Groundwater flow in the valley is generally southwestward. The Gnadenhutten municipal well field is located approximately 4,000 feet northeast of the Alsco Anaconda site. Several wells, including the municipal, residential, and plant wells are located within a 1.5 mile radius of the site (Figure 2).

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Alsco Anaconda plant has manufactured aluminum products since 1948 when it was established by Harvard Industries. The plant was acquired by the Anaconda Company in August 1971. The Anaconda Company was acquired by the ARCO Chemical Company, a division of the Atlantic Richfield Company (ARCO), in January 1977. In December 1986, ARCO sold the plant to Horsehead Industries; however, ARCO retained ownership of the portions of the plant used for sludge disposal. This 4.8-acre area constitutes the Alsco Anaconda site.

Prior to 1965, neutralized process wastewater was discharged directly to the Tuscarawas River. The settlement basin was completed in 1965 at the request of the State of Ohio Department of Health. During the period from 1965 to 1978, the unlined settling basin and sludge pit were used for the disposal of wastewater and wastewater treatment sludge. This sludge is a process waste which is included in the Resource Conservation and Recovery Act (RCRA) list of hazardous wastes (F019) because the sludge contains chromium and cyanides. As a result of effluent overflow from the basin and plant wastewater discharge, sludge is also located in the wooded area adjacent to the settlement basin (commonly referred to as the "swamp" because standing water collected as a result of the wastewater discharges). The total sludge volume at the site is approximately 8,850 cubic yards.

Since 1978, no solid wastes have been placed in the settlement basin or sludge pit; wastewater treatment sludges have been mechanically dewatered at the plant and shipped to an off-site facility for disposal. However, the treated wastewater discharge route included the impoundments until October 1980, when the effluent discharge was rerouted around the impoundments to the swamp area, which drained to the river. In October 1986, the outflow from the wastewater treatment plant was rerouted away from the swamp directly to a permitted outfall at the river to dry the swamp area. No standing water was present in the former swamp area within one month of the diversion of the outfall. The treated process wastewater has been discharged to the Tuscarawas River through a NPDES permitted outfall since 1972.

Based on reports filed by ARCO, U.S. EPA conducted a preliminary assessment of the site in 1983. Because of concern about potential contamination of water resources from sludge leachate, the site was proposed for inclusion on the NPL of uncontrolled hazardous waste sites eligible for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) in October 1984. The site was formally placed on the NPL in June 1986.

In November of 1984, ARCO retained International Technologies to perform a Remedial Investigation/Feasibility Study (RI/FS). In March 1985, RI activities began at the site. An Administrative Order by Consent was issued in January 1987 between U.S. EPA, Ohio EPA (OEPA), and ARCO for conducting the RI/FS.

The RI was conducted at the site from March 1985 to January 1989. During the study, samples of sludge, underlying soil, ground water, and Tuscarawas River sediments were collected at and near the site. An investigation was also conducted to determine if drums containing waste were buried at the site. Enough information was obtained to study cleanup alternatives for the contaminated sludge and soil at the site. A Focused Feasibility Study (FFS) developed for the source control operable unit, presenting an array of alternatives to address the contaminated sludge and soil, was completed in June 1989.

The U.S. EPA is the lead agency responsible for managing the investigation being conducted by ARCO of the Alsco Anaconda site. OEPA is the support agency for the site cleanup.

Pursuant to its authority under Section 122(e) of CERCLA, U.S. EPA sent a special notice letter to ARCO on June 26, 1989, notifying them of their potential liability and responsibility in conducting the design and implementation of the U.S. EPA's preferred alternative for the Alsco Anaconda site. As a result of this notice letter, ARCO informed U.S. EPA that Harvard Industries may also be a potentially responsible party (PRP) as a former owner and operator. Pursuant to its authority under Section 122(e)(2)(C), U.S. EPA notified Harvard Industries of their potential liability as an additional PRP and invited them to enter into negotiations with U.S. EPA and ARCO.

3.0 COMMUNITY PARTICIPATION ACTIVITIES

The U.S. EPA has conducted community relations activities throughout the RI/FFS to provide interested citizens and officials information about progress at the site.

The U.S. EPA distributed summary fact sheets providing background information on the Alsco Anaconda site and the administrative order between U.S. EPA, OEPA, and ARCO in February 1987. A public comment period for the order was held from February 4, 1987 through March 5, 1987.

The RI and FFS reports and Proposed Plan for the Alsco Anaconda site were released to the public in June 1989. These documents were made available to the public in both the administrative record and an information repository maintained at the U.S. EPA offices in Region V and at the Gnadenhutten Public Library. Summary fact sheets describing the results of the RI were distributed in May 1989. A fact sheet about the FFS and Proposed Plan was released in June 1989.

The notice of availability of site related documents and announcement of a public comment period and public meeting was published in the Dover-New Philadelphia Times-Reporter on June 26, 1989 and July 7, 1989. A public comment period was held from June 26, 1989 to July 25, 1989. A public meeting was held in Gnadenhutten on July 11, 1989. At this meeting, representatives from the U.S. EPA and OEPA answered questions about problems at the site and the remedial alternatives under consideration. A response to the comments received during the comment period is included in the Responsiveness Summary, which is Appendix A of this Record of Decision (ROD). This decision document presents the selected remedial action for the Alsco Anaconda site, in Gnadenhutten, Ohio, chosen in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan (NCP). The decision for this site is based on the administrative record. An index of the Alsco Anaconda administrative record is attached as Appendix B.

4.0 SCOPE AND ROLE OF OPERABLE UNIT

This ROD represents the first of two planned activities (operable units) at the site. In accordance with 40 CFR 300.68(c), the remedial action has been divided into two operable units: source material and ground and surface water. This ROD addresses the source material consisting of contaminated sludge and soil. The second planned activity will address contaminated ground and surface water. The response action proposed for the source material will contribute to the overall strategy for the site as it will remove the principal threat to human health and the environment due to possible ingestion or dermal contact with the sludge or soil, eliminate the threat of release of contaminated material to the river, and eliminate contaminant migration to the ground water.

5.0 SITE CHARACTERISTICS

The RI was conducted from March 1985 to January 1989 to determine the nature and extent of contamination and to gather enough data to evaluate cleanup alternatives for the site. Analyses for the EPA Hazardous Substance List (HSL) compounds were conducted in each environmental media. Samples of sludge, underlying soil, ground water, and river sediments were collected at and near the site.

Tuscarawas River flood estimates by the Army Corp of Engineers indicate 50-year and 100-year flood elevations of 825 and 827 feet MSL, respectively. Source areas such as the settling basin and former swamp area have elevations from 823 to 839 feet and 823 to 834 feet MSL, respectively, indicating the majority of the site in located within the 100-year flood plain, and a good portion of it is within the 50-year flood plain.

5.1 Sludge and Soil

The settling basin and sludge pit combined occupy approximately four-tenths of an acre. The depth of the sludge in the unlined excavations is approximately eight feet in the settling basin and seven feet in the sludge pit. The estimated total volume of sludge in these areas is 5,570 cubic yards. In addition, nearly 1.2 acres of the swamp area adjacent to the impoundments are covered by sludge, with an average thickness of about 1.7 feet. The estimated volume of sludge in the swamp is 3,280 cubic yards. The sludge consists primarily of aluminum oxyhydroxides, calcium carbonate, calcium sulfate, and lesser amounts of various other inorganic and organic constituents. Trace component concentrations vary depending on activities, processes, or sources that differed over time and space. In addition to chromium and cyanide, the sludge was found to contain several other potentially hazardous or toxic substances, including arsenic, cadmium, fluoride, mercury, and nitrate. In addition to these contaminants, volatile organic compounds (VOCs) were detected primarily in the southern impoundment and polychlorinated biphenyls (PCBs) were detected in the former swamp area only. Some of the contaminants have seeped into the soil beneath the sludge, but there are fewer chemicals in the soil and they are in the soil at much lower levels. See summary Tables 1 and 2 for concentrations detected in sludge and soil.

Current estimates indicate that approximately 50 cubic yards of swamp sludge are contaminated with PCBs in excess of 500 milligrams per kilogram (mg/kg), with a sampled high concentration of 3000 mg/kg. Samples taken under the swamp sludge indicate PCB soil contamination of less than 25 mg/kg. See Figures 3 and 4.

A 90-foot trench was dug across a portion of the property to determine if drums containing waste were buried there. No drums were discovered at the site.

5.2 Ground water

Unconsolidated sand and gravel deposits underlie the site, serving as aquifers that are the primary sources of both public and private drinking water in the area. There are no wells between the site and the river. Under a ground water drinking use scenario, sample results indicate chromium, cyanide, fluoride, nitrate, selenium, and tetrachloroethylene in the upper forty feet of the aquifer are at levels of public health concern. Currently, there is no known use of this contaminated water.

The extent of the ground water contamination remains unclear. Questions which remain about ground water contamination include: the horizontal and vertical extent of contaminated ground water, the discharge points of the contaminated ground water (i.e., does all the ground water discharge to the Tuscarawas River or does a portion flow beneath the river), and the actual/potential exposure routes (i.e., the upgradient manufacturing plant's pumping well, downgradient drinking water wells). These unknowns will be the focus of subsequent investigation (Phase II RI).

Based on ground water HSL sampling results from April 1985 to November 1986, cyanides were detected at a maximum of 700 micrograms per kilogram (ug/kg), whereas the lifetime health advisory is 200 ug/kg; chromium was detected at a maximum of 140 ug/kg, whereas the Maximum Contaminant Level (MCL) is 50 ug/kg, but proposed to increase to 100 ug/kg; fluoride was detected at a maximum of 8,700 ug/kg, whereas the MCL is 4,000 ug/kg; selenium was detected at a maximum of 14 ug/kg whereas the MCL is 10 ug/kg, but proposed to change to 50 ug/kg; nitrate was detected at a maximum of 2100 ug/kg, whereas the MCL is 1000 ug/kg; and tetrachloroethylene was detected at a maximum of 9.7 ug/kg, whereas the proposed MCL is 5 ug/kg.

5.3 Sediments

Sediment samples (near site, upstream, and downstream) were taken off-site in the Tuscarawas River to determine the levels of PCBs and chromium (known site specific contaminants) in the sediments of the river. Although analysis of this sampling suggests there may be no site impact upon the ambient river sediment quality, further investigation is anticipated as part of the Phase II RI.

6.0 SUMMARY OF SITE RISKS

A risk assessment of potential risks to human health or the environment if no action is taken to clean up the site was developed for the Alsco Anaconda site. The risk assessment examined whether existing or future contact with the source material contaminants poses unacceptable risks. The risk assessment for ground water will be generated after Phase II investigative work is completed. The risk assessment was developed in accordance with U.S. EPA procedures, as outlined in the Superfund Public Health Evaluation Manual (SPHEM; U.S. EPA 1986). Conclusions of the assessment were that an unacceptable risk to humans does exist due to PCBs in the swamp sludge and arsenic in the settling basin sludge if there is repeated contact with the sludge in these areas over a long period of time.

6.1 Contaminant Identification

The constituents of concern via direct contact (ingestion and dermal pathways) with contaminated sludge and soil were those metals present above background, all inorganic constituents of toxicological concern, PCBs, and all organic constituents detected above detection limits. See Tables 1 and 2 for contaminants of potential concern and concentrations of chemicals on which the risk assessment was based.

6.2 Exposure Assessment

At the Alsco Anaconda site, there are four potential ways to come in contact with contaminants: through the air, ground water, the river, and site sludge and soil. Contact with airborne contaminants does not represent a potential pathway of concern. Contaminants are present in sludge which has a relatively high water content and are covered with the vegetation. The organic constituents are present in levels not expected to result in volatilization to air, and particulate dispersion is unlikely.

Contaminants were found in ground water samples beneath the site. Preliminary investigation indicates contaminants entering the river's water and sediments through the ground water are diluted to very low levels. The potential risks to public health and the environment posed by contaminated ground water or sediments and their impact on the river will be examined in the next phase of investigation.

Direct contact with site sludge is a potential exposure pathway. Exposure may result from dermal absorption of contaminants and ingestion of contaminated sludges. At the time the risk assessment was developed, the site was unfenced, and trespasser exposure was feasible. Thus, it was possible that children playing at the site or workers from the adjacent plant going on the site might be exposed to contaminants in the sludge. Although the fence has reduced access from certain routes, access to the site via the river still exists.

The assumptions made for the purpose of the risk assessment included:

- People would be exposed to areas where the highest levels of contamination were found. For PCB exposure, an upper bound and average concentration were used in the risk calculations;

- Sludge ingestion is a route of exposure to all contaminants of concern. Dermal absorption is also considered as a route of exposure for PCBs and organic noncarcinogens;

- 100 percent absorption is assumed,

- Children are exposed one day per week over a seven-year period. Workers are exposed one day per week over a forty-year working life, and

- Sludge ingested in a day is estimated to be 100 milligrams.

These conservative assumptions fashion the risk assessment to be biased toward health protection.

6.3 Toxicity Assessment

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of milligrams per kilogram per day (mg/kg-day), are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RFDs) have been developed by EPA for indicating the potential for adverse health effects from the exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are also expressed in mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use if animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

The CPFs and RfDs for the contaminants of concern at the Alsco Anaconda site are listed in the risk calculation tables (Tables 1 and 2).

6.4 Summary of Risk Characterization

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates, as a plausible upper bound, an individual has a one in one million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at the site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the Hazard Index (HI) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HIs for all contaminants within a medium or across all media which a given population may reasonably be exposed, a total or cumulative HI can be generated. This HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. A cumulative HI of less than one is considered an acceptable risk to public health. If the HI results in a value greater than one, compounds in the mixture are segregated by critical effect and separate HIs are derived for each effect.

For most contaminants, the level of risk to public health was below the safety standards used by U.S. EPA. The adverse potential risks associated with the Alsco Anaconda site sludge and soil are listed below:

- Trespassing plant workers could be exposed to arsenic in the settling basin sludge that could yield an excess lifetime cancer risk of 1.16×10^{-6}.

- Trespassing children and plant workers could be exposed to PCBs in the swamp sludge in a worst case scenario that could yield an excess lifetime cancer risk of 6.31×10^{-3} and 1.28×10^{-2}, respectively.

Finally, portions of the site are located on the Tuscarawas River flood plain. Therefore, in the event of a major flood, contaminated sludge and soil could migrate from the site, posing undetermined risks to the environment and public health.

The Ohio Department of Natural Resources Division of Natural Areas and Preserves, Natural Heritage Program was contacted during the RI in order to address concerns for sensitive biota or habitats. The Heritage Program had no records for rare or endangered species within a two-mile radius of the Alsco plant site, and was unaware of any unique ecological sites in the vicinity of the study area. There are no existing or proposed state nature preserves or scenic rivers in Tuscarawas County.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare,

or the environment through dermal contact and ingestion of the contaminated sludge and soil and migration of these to the ground and surface water.

7.0 DESCRIPTION OF ALTERNATIVES

Based on exposure pathways and receptors of concern and the specific areas of existing or potential contamination, medium-specific remedial action goals were established for the Alsco Anaconda site. The objective of remedial action is to prevent exposure to contaminants in excess of established standards, a cumulative HI value of greater than one for critical effect, and/or a total excess cancer risk of greater than 1×10^{-6} in the following media:

- sludge and soil,
- ground water,
- surface water,
- air.

Direct contact exposure of trespassers to site sludge and soil (site workers and children); and ground water ingestion exposure to on-site ground water have been identified as the routes of exposure of concern at the site. Remedial Action Goals for the sludge and soil include preventing these materials from contributing to further ground water contamination in excess of the ground water Remedial Action Goals. The potential for ingestion exposure to ground water contamination migrating off the site will be evaluated in the Phase II RI.

An array of alternatives for addressing source material contamination at the Alsco Anaconda site was developed. This ROD will not address ground or surface water contamination. The remedial alternatives selected were evaluated based on their ability to be protective of human health and the environment, attain compliance with Federal and State environmental regulations, be cost-effective, and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedial alternatives considered for this site are briefly described below.

Alternative 1 - No Action

U.S. EPA is required to evaluate a "No Action" alternative. This alternative will result in minimal changes to the existing site environment. However, it does include installation of a security fence to limit human exposure via direct contact with the waste. Also, this alternative involves use restrictions to control future use of the site.

This alternative will not satisfy the remedial action goals for the site. Health risks posed by direct contact with contaminated sludge and soil would be greater than 1×10^{-6}. Also, the threat of a release to the river and further contribution to ground water contamination are not addressed.

The estimated capital cost of this remedy is estimated to be $39,000, with no annual operation and maintenance (O&M) costs. The estimated time to implement this remedy is approximately 3 months.

Institutional controls and the security fence will be part of each remedy which proposes leaving contaminated waste on site (Alternatives 2, 5, 6, and 9).

During implementation of any of the following alternatives, if ground or surface water is extracted to accommodate the excavation of sludge and contaminated soil, it will be handled to meet all Federal and State rules.

Alternative 2 - Consolidate/Cap Impoundments, Cap Sludge Pit; Incinerate Hot Swamp Material, Slurry Wall/Cap Swamp; Flood Berm; Treat/Monitor Ground Water

This alternative is primarily a containment option. The major components of this alternative include excavating settling basin wastes and redepositing waste in same general area of contamination in a lined impoundment, capping it as well as the sludge pit; the hot swamp material (approximately 50 cubic yards of swamp sludge contaminated with PCBs in excess of 500 mg/kg) is excavated and transported off-site to a facility permitted to incinerate PCB waste, the remaining swamp area is capped; an approximately 25-foot deep hanging slurry wall is constructed around the entire swamp area, extraction wells are installed to maintain hydraulic separation between swamp waste and the ground water; ground water quality is monitored; and a berm (10 feet high and 700 feet long) is installed along the Tuscarawas River for flood protection.

F019 sludge is a RCRA-regulated waste. However, placement of the waste is not occurring in this alternative, so Land Disposal Restrictions (LDR) are not applicable. Liner and caps used on site will meet RCRA Subtitle C regulatory criterion. RCRA surface impoundment (40 CFR 264.228) closure regulations are relevant and appropriate.

At the completion of the remedial action, and all remaining alternatives evaluated (Alternatives 3, 4, 5, 6, and 9), health risks posed by direct contact with sludge and soil would be below a cumulative HI value of one for critical effect for noncarcinogens and below 1×10^{-6} cumulative excess cancer risks for carcinogens. Meeting this target cleanup level would protect against exposure by direct contact and ingestion, as determined by the risk assessment. The estimated capital cost of this component of the remedy is $3,717,480, with annual O&M costs estimated to be $487,000. The estimated time to implement this remedy and meet cleanup goals is approximately six to nine months.

Alternative 3 - Off-site Treatment/Disposal Sludge Pit and Impoundments; Off-site Incineration of Hot Swamp Material; Off-site Treatment/Disposal of Remaining F019 Sludge in Swamp

This alternative consists of the following components: hot swamp material is excavated and transported off site to a facility permitted to incinerate

PCB waste; the F019 sludge and underlying soil remaining in the swamp (approximately 3,250 cubic yards contaminated with PCBs) and in the sludge pit, northern and southern impoundments (approximately 5,570 cubic yards) are excavated to levels meeting clean closure requirements of 40 CFR 264.228 and OAC 3745-66-11 for treatment and disposal or reclamation/reuse at an off-site facility; and the excavated sludge pit and impoundments are backfilled with clean borrow (approximately 5,600 cubic yards). Clean closure levels require excavation to a depth such that the remaining soils have pollutants at concentrations below a cumulative HI value of one for critical effect for noncarcinogenic pollutants and 1 x 10^{-6} cumulative excess cancer risk for carcinogenic pollutants. The indicator chemicals and their concentrations necessary to meet these clean closure levels for carcinogens and noncarcinogens will be established during Remedial Design/Remedial Action (RD/RA).

The off-site facility used for treatment and disposal of the sludge and soil will be in compliance with the CERCLA off-site policy (approved facility) or reclamation/reuse facility. Placement of a RCRA-regulated waste is occurring; therefore, LDR are applicable. RCRA surface impoundment (40 CFR 264.228) closure regulations are relevant and appropriate.

Meeting the target cleanup levels would protect against exposure by direct contact and ingestion, as determined by the risk assessment. The estimated capital cost of this component of the remedy is $4,161,066, with no annual O&M costs. The estimated time to implement this remedy and meet cleanup goals is approximately four to six months.

Alternative 4 - Off-site Treatment/Disposal Sludge Pit and Impoundments; Off-site Incineration F019 Sludge in Swamp

This alternative is similar to Alternative 3, with the exception of all of the F019 sludge in the swamp contaminated with PCBs (approximately 3,300 cubic yards) is excavated and transported off-site to a facility licensed for incineration of PCBs.

The estimated capital cost for this alternative is $7,467,616, with no annual O&M costs. The estimated time to implement this remedy and meet cleanup goals is approximately four to six months.

Alternative 5 - On-site Treatment/Landfill Sludge Pit and Impoundments; Off-site Incineration of Hot Swamp Material; Off-site Treatment/Disposal of Remaining F019 Sludge in Swamp; Monitor Ground Water

The swamp material is handled as described in Alternative 3. The sludge pit and impoundments wastes are managed as follows: the sludge pit and settling basin sludge and underlying soil are excavated to levels meeting clean closure requirements, pre-treated, then stabilized/solidified; an on-site landfill is constructed in the general area of the existing sludge pit for the disposal of these wastes; and ground water quality is monitored.

The excavated sludge pit and impoundment wastes are treated on-site for cyanides (by oxidation) and metals (by lime-based stabilization/solidification) to levels which will meet F019 treatment requirements of LDR prior to disposal.

A landfill meeting RCRA requirements for disposal of hazardous materials will be constructed on-site occupying an area encompassing the land east of and including the sludge pit. The landfill will be capped using a RCRA-type multilayer cap which meets RCRA Subtitle C closure requirements. A groundwater monitoring program will be implemented to meet the substantive requirements for ground water monitoring and corrective action under RCRA 40 CFR 264, Subpart F - Ground water Protection.

The design proposed for the on-site landfill used in this alternative, and in Alternatives 6 and 9, must meet OEPA siting regulations for a hazardous [OAC 3745-54-18 (B) (1-2)] or solid waste landfill [OAC 3745-27-06 (I) (4-6)]. As presently proposed it does not meet these regulations.

Meeting the target cleanup levels would protect against exposure by direct contact and ingestion, as determined by the risk assessment. The estimated capital cost of this component of the remedy is $5,064,046, with annual O&M costs estimated to be $120,750. The estimated time to implement this remedy and meet cleanup goals is approximately six to nine months.

Alternative 6 - On-site Treatment/Landfill Sludge Pit and Impoundments; Off-site Incineration F019 Sludge in Swamp; Monitor Ground Water

This alternative manages the sludge pit and impoundments waste material and groundwater monitoring as described in Alternative 5. The swamp material is managed as described in Alternative 4.

Meeting the target cleanup levels would protect against exposure by direct contact and ingestion, as determined by the risk assessment. The estimated capital cost of this component of the remedy is $7,003,322 with annual O&M costs estimated to be $120,750. The estimated time to implement this remedy and meet cleanup goals is approximately six to nine months.

Alternative 9 - On-site Treatment/Landfill Sludge Pit and Impoundments; Off-site Incineration of Hot Swamp Material, On-site Treatment/Landfill Remaining F019 Sludge in Swamp; Monitor Ground Water

This alternative is similar to Alternative 5, except for the remediation of swamp materials. On-site disposal of the sludge pit and impoundment materials (approximately 5,570 cubic yards) and off-site incineration of hot swamp materials (approximately 50 cubic yards) are described in Alternative 5. Remaining F019 sludge in the swamp (approximately 3,250 cubic yards) will be treated similar to sludge pit and impoundment waste and will be disposed of within the on-site RCRA landfill but in a separate cell.

The estimated capital cost of this alternative is $2,765,256, with annual O&M costs estimated to be $126,500. The estimated time to implement this remedy and meet cleanup goals is approximately nine to twelve months.

8.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

The following nine criteria were used by the U.S. EPA to evaluate alternatives developed for the Alsco Anaconda site in the FFS report. The remedial alternative selected for the site must represent the best balance among the evaluation criteria.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection by eliminating, reducing, or controlling exposures to unacceptable risks posed by hazardous substances.

- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether or not a remedy will meet all of the Federal and State environmental and public health regulations. This criteria also considers advisories or other guidelines pertaining to site specific cases.

- Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

- Reduction of toxicity, mobility, or volume is the anticipated performance of the treatment technologies a remedy may employ.

- Short-term effectiveness assesses the impacts to the local community, environment, and workers during the construction and implementation of the alternative.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital and operation and maintenance costs, and net present worth costs.

- State acceptance indicates whether, based on its review of the RI, FFS, and Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative at the present time.

- Community acceptance indicates whether the public concurs with the remedy presented in the U.S. EPA's Proposed Plan.

8.1 Overall Protection of Human Health and the Environment

All of the alternatives, except Alternative 1 (no action) provide adequate protection of human health and the environment from exposure to

contaminated source material. Risk due to direct contact is reduced to less than established standards, cumulative excess cancer risk levels less than 1 x 10^{-6}, and less than a cumulative HI value of one for critical effect for noncarcinogens. Alternative 1 is eliminated from consideration for selection.

Alternative 2 addresses risk by removing high-level PCB sludges and containment of remaining swamp, impoundment and sludge pit areas. The flood berm inhibits the release of contaminants to the river. Pumping ground water inside the slurry wall and ensuring a separation between the waste and ground water will minimize potential for waste migration to the ground water. The remaining alternatives all combine complete source removal and treatment to reduce impacts to human health and the environment, but differ in disposing of material on- or off-site.

Risk due to contaminated ground water is not addressed here, but the overall site remedy will provide adequate protection of human health and the environment for each exposure pathway. All alternatives, except Alternative 1, reduce risk due to further contaminated ground water by reducing further contribution to ground water contamination. Alternatives 3 and 4 accomplish this to the greatest degree by removing all solid contamination from the site. Alternatives 2, 5, 6, and 9 reduce risk to varying degrees with combinations of on-site and off-site disposal of contaminated source material. The final site remedy for the ground water operable unit will be selected at a later date and will address the currently contaminated ground water.

8.2 Compliance with ARARs

The remedial actions selected for the source material operable unit will meet ARARs for those activities. Since the ground water operable unit is a part of the site, the future actions proposed for it must also meet ARARs so that the total of all remedial actions taken at the site will attain ARARs.

Landfill citing regulations for the State of Ohio for both hazardous [OAC 3745-54-18 (B) (1-2)] and solid waste [OAC 3745-27-06 (I) (4-6) and 3745-27-11] apply at this site for alternatives 5, 6, and 9. The design proposed for the on-site landfill will not meet OEPA siting regulations for a hazardous or solid waste landfill.

Toxic Substances Control Act (TSCA) PCB Disposal regulations 40 CFR 761.60 will be met by incineration of waste contaminated with PCBs greater than 500 mg/kg at a TSC-regulated incinerator for all alternatives except Alternative 1. Waste contaminated with PCBs in concentrations between 50 and 500 mg/kg can be land disposed in a chemical waste landfill that meets TSCA (PCBs only) and/or RCRA (PCBs and RCRA hazardous waste) requirements. Any waste taken to a off-facility must be in compliance with the CERCLA off-site policy (approved facility).

RCRA Land Disposal Restrictions will be applicable to Alternatives 3, 4, 5, 6, and 9 and will be met by providing appropriate treatment for the F019

waste prior to disposal. RCRA surface impoundment (40 CFR 264.228) closure regulations are relevant and appropriate to the sludge pit/impoundment and swamp area respectively. The landfill closure requirements (40 CFR 264.310) would be applicable to any on-site land disposal unit constructed in Alternatives 5, 6, and 9. All alternatives, except Alternative 1, meet these ARARs.

8.3 Long-Term Effectiveness and Permanence

Alternatives 3 and 4 afford the highest degree of long-term effectiveness and permanence utilizing off-site treatment (incineration) of PCB-contaminated sludge and off-site disposal to manage residue from incineration, and off-site treatment and disposal of F019 sludge and soil. Alternatives 5, 6, and 9 offer a moderate degree of long term effectiveness and permanence. An on-site lined and capped landfill is a reliable technology given proper construction, but maintenance associated with a landfill over time can be high. The flood berm proposed in Alternatives 2, 5, 6, and 9 would have high maintenance requirements due to erosion from the river and unstable foundation soil. Alternative 2 provides the least degree of long-term effectiveness and permanence as untreated waste material is left on-site and capped. Although a properly constructed cap can be reliable, maintenance associated with it (including a potential need for replacement) can be high. The suitability of these control measures are questionable in a flood plain setting.

8.4 Reduction of Toxicity, Mobility and Volume

All alternatives (except no action) treat a principal threat posed by the site source material by incinerating sludge contaminated with at least 500 mg/kg PCB. Alternatives 4 and 6 provide the most treatment, and therefore, the greatest reduction in toxicity, through removal and incineration of all F019 sludge contaminated with PCB concentrations above 25 mg/kg. The volume of waste would not be substantially reduced because only organic constituents are destroyed, and the volume of organics in the sludge is minimal. Alternatives 3, 4, 5, 6, and 9 all use a combination of oxidation (to destroy cyanide) and stabilization/solidification to reduce the mobility of inorganic contaminants. Alternative 2 does not pretreat F019 waste providing the least reduction in toxicity, mobility, and volume.

8.5 Short-Term Effectiveness

Alternatives 2, 5, 6, and 9 take the longest time to implement as construction activities (i.e., berm, cap, landfill) are executed as part of the remedies. All alternatives (except no action) call for excavation and material handling and the potential for releasing waste materials into the atmosphere. Alternative 2 presents the greatest risk to workers and the environment due to particulate emission during construction activities. Alternatives 3 and 4 include off-site transport of all contaminated materials on site, and therefore, the community is subject to more short-term risks than in other alternatives. Precautionary measures will include

protection from direct contact of contaminated sludge and soil to workers, and dust suppression. The implementation period until cleanup goals are achieved for all alternatives is similar.

8.6 Implementability

Alternatives 3 and 4 would be the simplest to implement, both technically and administratively. However, there is some uncertainty of availability of facilities to pretreat and landfill or reclaim/reuse F019 sludge and soil. Alternative 2 is the most difficult to implement, requiring fairly complicated construction activities (berm, slurry wall, cap, and landfill). Furthermore, swamp waste would be disturbed during these activities. Alternatives 5, 6, and 9 are complex because of the on-site fixation of the waste materials and the installation of an on-site landfill. Any of the on-site disposal remedies will face administrative opposition by OEPA due to flood plain siting concerns.

8.7 Cost

Alternatives incorporating on-site construction as part of the remedy (2, 5, 6, and 9) have higher operation and maintenance costs associated with these structures. Because of operation and maintenance requirements, Alternative 2 has the highest total present worth cost. Off-site incineration capital costs are high for Alternatives 4 and 6 because they utilize this technology for treatment, making these two alternatives the most expensive after Alternative 2. Alternative 3 provides a similar level of protection as Alternative 4, but is less costly because it provides for less incineration treatment.

8.8 State Acceptance

The State of Ohio does not support any alternatives which include on-site disposal or closure of waste material (2, 5, 6, and 9) as part of the remedy. The State contends Alternatives 2, 5, 6, and 9 do not provide adequate protection of human health and the environment because there is a potential for release of contaminants when waste material is located in a floodplain.

The State believes Alternative 4 is more protective than Alternative 3 because all the PCB contaminated swamp sludge will be incinerated before landfilling (if landfilling, as opposed to reclamation/reuse is the selected disposal option). The State has indicated that although it prefers incineration as the form of treatment for the PCB contaminated waste, considering all factors, it will accept Alternative 3. The State would also accept Alternative 4.

8.9 Community Acceptance

The U.S. EPA's preferred alternative was presented at the start of the public comment period through distribution of a fact sheet. The notice of availability of site related documents and announcement of a public comment

period and public meeting was published in the Dover-New Philadelphia Times-Reporter on June 26, 1989 and July 7, 1989. A formal public meeting was held to discuss the proposed plan in Gnadenhutten, Ohio on July 11, 1989.

Comments received indicated residents and local officials are supportive of the U.S. EPA's preferred alternative. Public comments on the proposed plan are addressed in the Responsiveness Summary, attached to this document.

9.0 THE SELECTED REMEDY

Alternative 3 addresses all public health and environmental threats posed by contaminated source material at the site. This alternative represents the best balance among the evaluation criteria and satisfies the statutory requirements of protectiveness, compliance with ARARs, cost-effectiveness, and utilization of permanent solutions and treatment to the maximum extent practicable.

All of the F019 waste in the southern and northern impoundments and sludge pit (approximately 5,570 cubic yards) will be excavated and hauled to an off-site facility in compliance with the Section 121(d)(3) of CERCLA, 42, U.S.C. 9621(d)(3) and the CERCLA Off-site Policy or a reclamation/reuse facility. Clean up levels for the F019 waste sludge and underlying soil will meet the remedial action goals. All sludge and underlying soil are removed to a depth that prevents the ingestion or direct contact of waste having a cumulative HI value of one for critical effect for noncarcinogens or having 1×10^{-6} cumulative excess cancer risk from carcinogens, and prevents contribution to further ground water contamination to in excess of Maximum Contaminant Levels (MCLs). Prior to disposal, treatment standards for the F019 waste, as required by the RCRA Land Disposal Restrictions, will be met by the accepting off-site approved facility. The topical depression left by the excavation of the sludge pit and northern and southern impoundments will be backfilled with clean borrow (approximately 5,600 cubic yards) and recontoured in a manner which complies with OAC 3745-66-11 and ensures contaminated ground water does not contact the surface.

Hot swamp material (approximately 50 cubic yards contaminated with PCBs greater than 500 mg/kg) will be excavated, drummed, transported and incinerated off-site at a facility which is approved to incinerate such materials.

Remaining F019 sludge and underlying soil in the swamp (approximately 3,250 cubic yards contaminated with less than 500 mg/kg of PCBs) will be excavated to clean up levels (discussed above) and hauled to an approved landfill or reclamation/reuse facility. These materials will be pretreated as required at the disposal facility. Because of possible instability of the swamp, roadways may be installed and used for swamp excavation. The swamp area will be regraded and seeded to promote revegetation of the area.

All excavated sludge and soil will be packaged and transported off-site in compliance with 40 C.F.R. 262 and 263 and 49 C.F.R. 170-189 107.1 and

1711.500. The excavation and packaging shall be completed in such a manner that particulate matter or other pollutants are not emitted to the air in excess of the levels allowed by 40 C.F.R. 50, Section 12 of the Clean Air Act (42 U.S.C. 7412), and Rule 08(B) of Chapter 3745-17 of the Ohio Administrative Code (OAC 3745-17-08(b)) and OAC 3745-57-01. Any equipment used for excavating, sampling or handling contaminated sludge and soil shall be decontaminated in accordance with 40 C.F.R. 264.114 (OAC 3745-66-14).

Any clearing of the wooded area to the west of the swamp for the purpose of constructing access roads shall not occur within fifty feet of the eastern shore of the Tuscarawas River; shall minimize the amount of clearing and ensure that the cleared area is returned to its previous condition after all required remedial actions are completed.

If ground or surface water is extracted to accommodate the excavation of sludge and underlying soil, it must be sampled to determine whether there are any hazardous constituents. Based on the results of this sampling, extracted ground water will be transported, discharged, and/or disposed in was way which meets all Federal and State rules.

Meeting the target cleanup levels would protect against exposure by direct contact and ingestion, as determined by the risk assessment. The estimated capital cost of this component of the remedy is $4,161,066, with no annual O&M costs. Table 3 illustrates a detailed cost summary for this remedy. The estimated time to implement this remedy and meet cleanup goals is approximately four to six months.

Some changes may be made to this remedy as a result of remedial design and construction processes. Such changes, in general, reflect modifications resulting from the engineering design process.

10.0 STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is justified. The selected remedy must be cost-effective and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the mobility, toxicity, or volume of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

10.1 Protection of Human Health and the Environment

The selected remedy protects human health and the environment from exposure to contaminated source material. All contaminated sludge and soil is removed from the site, reducing the risk due to direct contact to less than established standards, cumulative excess cancer risk levels less than 1×10^{-6}, and less than a cumulative HI value of one for critical effect for noncarcinogens. Risk due to contaminated ground or surface water is not addressed here, but the overall site remedy will provide adequate protection of human health and the environment for each exposure pathway. Removal of contaminated source material will prevent these materials from contributing to further ground or surface water contamination. There are no short-term threats associated with the selected remedy that cannot be readily controlled.

10.2 Compliance with Applicable or Relevant and Appropriate Requirements

The selected source material remedy will comply with all applicable or relevant and appropriate chemical-, action-, and location-specific requirements (ARARs). The ARARs are presented below.

Chemical-specific ARARs:

- Maximum Contaminant Levels (MCLs) promulgated under the Safe Drinking Water Act (SDWA) will not be achieved with this source material operable unit, but the overall site remedy will achieve MCLs. This remedy will facilitate ultimate achievement of the MCLs by removing contamination which contributes to the ground water concentrations being above MCLs.

- Treatment and/or disposal of PCB contaminated waste complies with the Toxic Substance Control Act 15 U.S.C. 2601 and 40 CFR 761.60.

- Ohio Revised Code (ORC) 6111.042 regulations requiring compliance with national effluent standards will be met.

- Ohio Administrative Code (OAC) 3745-17-08(B) addresses restrictions of fugitive dust emission and will be met.

- The remedy will comply with CERCLA Section 121(d)(3) and the CERCLA Off-site Policy for waste transported off-site.

Action-specific ARARs:

- Surface impoundment closure requirements (40 CFR 264.228) will be met. RCRA Land Disposal Restrictions (LDR) under 40 CFR 268 apply because placement is occurring and will be met.

- Excavated sludges and soils will be packaged and transported off-site in compliance with 40 CFR 262 and 263 and 49 CFR 170-189, 107.1 and 1711.500.

- The excavation and packaging will be completed in a manner that particulate matter or other pollutants are not emitted to the air in excess of levels allowed by 40 CFR 50, Section 12 of the Clean Air Act, and Rule 08(B) of Chapter 3745-17 of the OAC 3745-17-08(b), OAC 3745-57-01, and work is in compliance with 3745-1-05(A) and (B), 3745-31-05(A)(3) and ORC 3767.

- The excavated sludge pit and settling basin will backfilled with clean borrow and recontoured in a manner which complies with OAC 3745-66-11 and any access roads constructed and revegetated in compliance with 33 CFR 322.

- Any equipment used for excavating, sampling, or handling contaminated source material shall be decontaminated in accordance with 40 CFR 264.114 (OAC 3745-66-14).

- Use restrictions 40 CFR 264.116 and 264.117.

Location-specific ARARs:

- The remedy will comply with Executive Order 11988, Floodplains Management and OAC 3745-54-18 locations standards.

10.3 Cost-effectiveness

The selected remedy is cost-effective because it has been determined to provide overall effectiveness proportional to its cost, the net present worth value being $4,161,066. This alternative attains the same reduction in current risks from direct contact with source materials as Alternatives 2, 5, 6, and 9, requires no O&M expenditures, and therefore, is the least expensive. Alternative 4 has similar benefits as the preferred alternative, but the additional cost (approximately $3.3 million) in achieving a greater reduction in the toxicity of the organic contaminants outweigh the expected benefits.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

The U.S. EPA has determined the selected remedy represents the maximum extent to which permanent solutions and treatment technologies (or resource recovery technologies) can be utilized in a cost-effective manner for the source control operable unit at the Alsco Anaconda site. This remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, cost, also considering the statutory preference for treatment as a principal element and considering State and community acceptance.

The selected remedy is consistent with program expectations that highly toxic and mobile wastes are a priority for treatment. The most toxic swamp sludge contaminated with PCBs in excess of 500 mg/kg is incinerated off-

site. While the selected remedy may not offer as high a degree of long-term effectiveness and permanence as alternatives which call for incinerating all the PCB contaminated swamp sludge, it will significantly reduce the inherent hazards posed by the source material through oxidation to destroy cyanide and stabilization/solidification of the metals and PCBs such that the residual material that remains to be managed at an off-site disposal facility can be contained with a high degree of certainty over the long term. Since the remaining material will be bound up, the impact on human health and the environment would be minimal if the containment system were to fail. Additionally, if all the PCB contaminated swamp F019 sludge was incinerated, the ash would still have to be handled and treated according to the LDR standards.

Recycling the F019 sludge may be feasible and will be implemented if practicable.

The selected remedy does satisfy the statutory preference for a permanent solution because all contaminated sludge and soil are removed from the site and treated. No waste will be left on the site.

10.5 Preference for Treatment as a Principal Element

All of the contaminated sludge and soil are treated or recycled in Alternative 3. The swamp sludge highly contaminated with PCBs is incinerated. The remaining sludge and soil may transported off-site to a reclamation/reuse facility. If recycling is not feasible, prior to disposal, treatment standards for the F019 waste remaining on the site in former swamp area, the settling basin, and sludge required by the RCRA LDR are met through oxidation, and stabilization/solidification. Therefore, the statutory preference for remedies that employ treatment as a principal element is satisfied.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Alsco Anaconda site was released for public comment in June 1989. The Proposed Plan identified Alternative 3, excavation and off-site incineration of swamp sludge highly contaminated with PCBs, excavation of settling basin, sludge pit, and remaining swamp sludge and soil and transportation off-site for treatment and disposal or reclamation/reuse, and backfilling the excavated settling basin and sludge pit with clean material, as the preferred alternative. EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

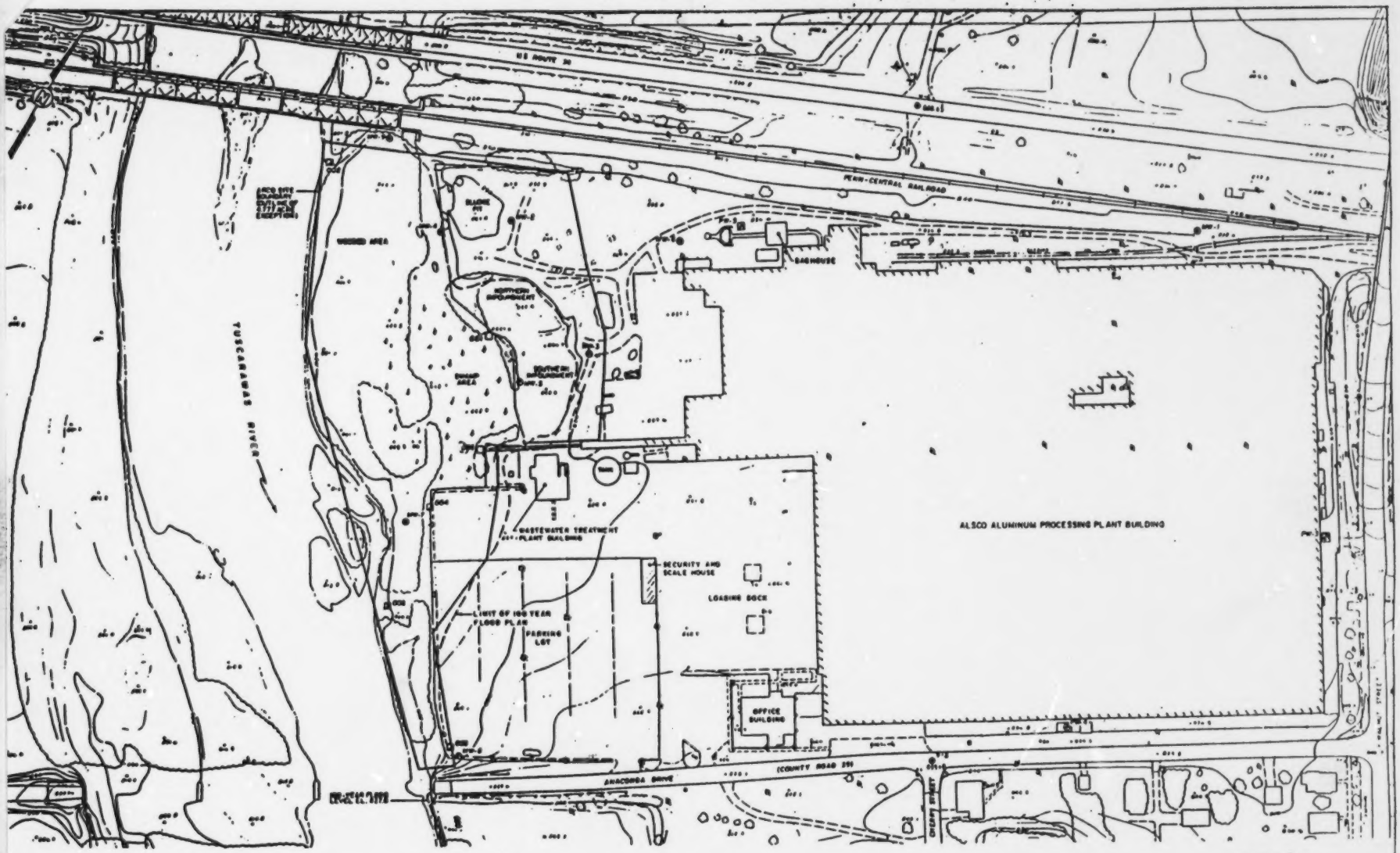

FIGURE 1

ALSCO-ANACODA SITE
AND VICINITY

GNADENHUTTEN, OHIO

PREPARED FOR

ARCO CHEMICAL COMPANY
NEWTOWN SQUARE, PENNSYLVANIA

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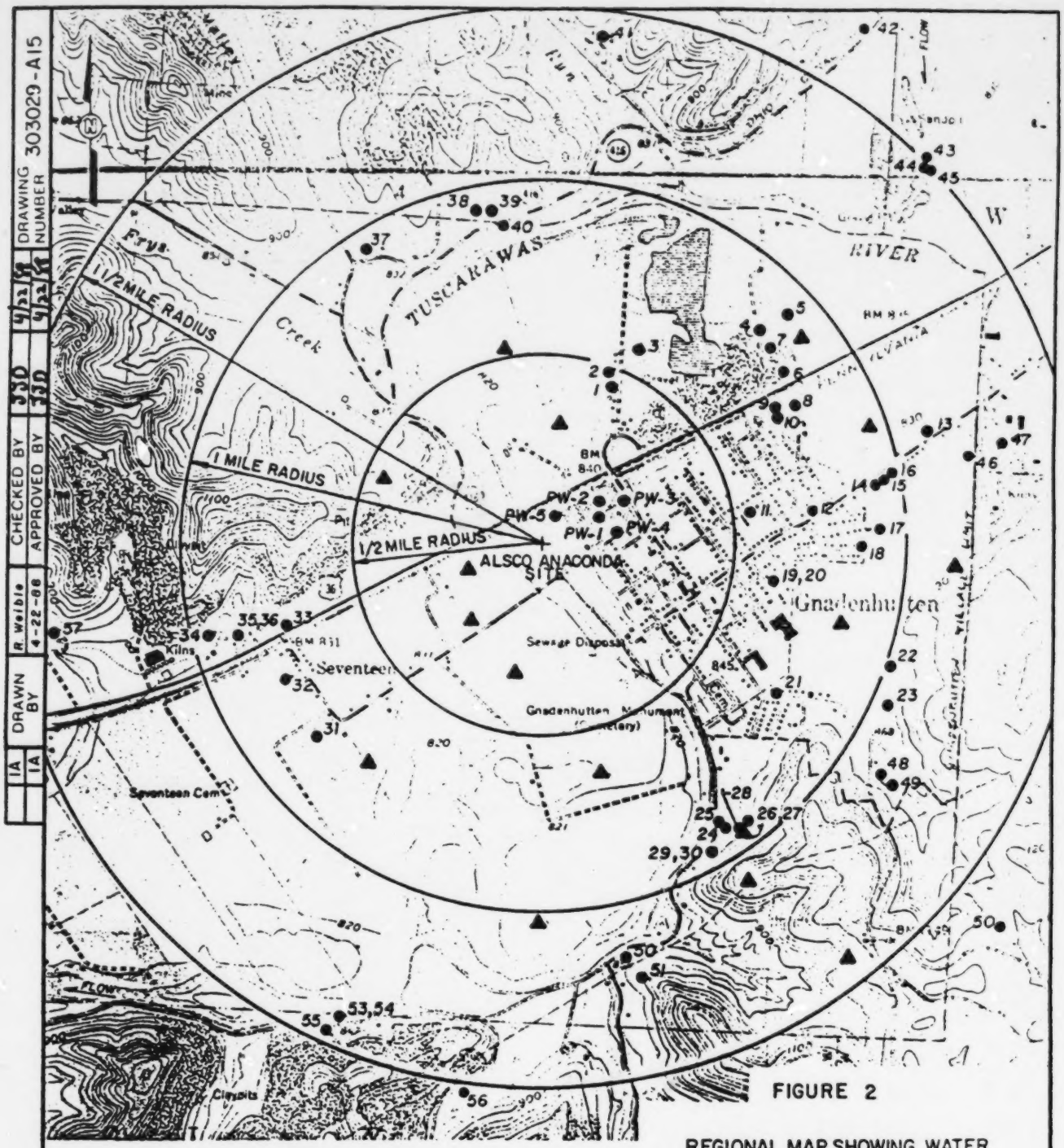
1 1/2 MILE RADIUS
1 MILE RADIUS
1/2 MILE RADIUS
TUSCARAWAS RIVER
Frys Creek
ALSCO ANACONDA SITE
PW-1
PW-2
PW-3
PW-4
PW-5
Gnadenhutten
Seventeen
Sewage Disposal
Gnadenhutten Monument
Seventeen Cem
Kilns
Clay Pit
Flow
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19,20 21 22 23 24 25 26,27 28 29,30 31 32 33 34 35,36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 53,54 55 56 57

SCALE
0 2000 4000 FEET

REFERENCES:

1. U.S.G.S. 7.5-MINUTE SERIES GNADENHUTTEN AND NEW PHILADELPHIA, OHIO QUADRANGLES DATED 1962, SCALE: 1" = 2000'
2. ODNR DIVISION OF WATER, 1945-1985 WELL LOGS AND DRILLING REPORTS
3. BURGESS & NIPLE LTD., 1984 HYDROGEOLOGIC STUDY, ARCO METALS CO. GNADENHUTTEN, OHIO.

LEGEND

10● WATER WELL (LOG IN APPENDIX C)

▲ OIL / GAS WELL

FIGURE 2

REGIONAL MAP SHOWING WATER AND OIL/GAS WELL LOCATIONS
GNADENHUTTEN, OHIO

PREPARED FOR

ARCO CHEMICAL COMPANY
NEWTOWN SQUARE, PENNSYLVANIA

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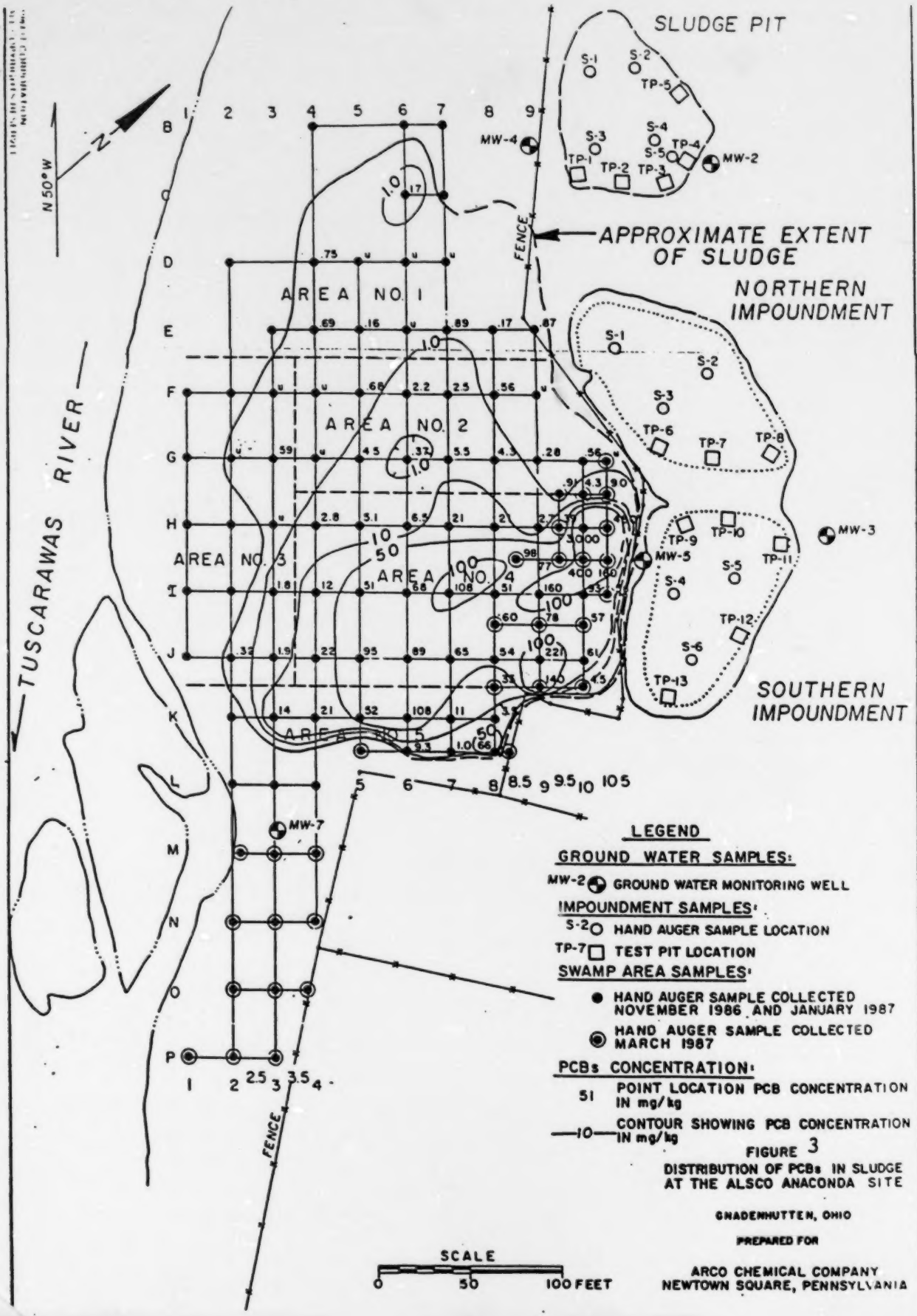

LEGEND

GROUND WATER SAMPLES:

MW-2 ⊕ GROUND WATER MONITORING WELL

IMPOUNDMENT SAMPLES:

S-2 ○ HAND AUGER SAMPLE LOCATION

TP-7 □ TEST PIT LOCATION

SWAMP AREA SAMPLES:

● HAND AUGER SAMPLE COLLECTED NOVEMBER 1986 AND JANUARY 1987

◉ HAND AUGER SAMPLE COLLECTED MARCH 1987

PCBs CONCENTRATION:

51 POINT LOCATION PCB CONCENTRATION IN mg/kg

—10— CONTOUR SHOWING PCB CONCENTRATION IN mg/kg

FIGURE 3

DISTRIBUTION OF PCBs IN SLUDGE AT THE ALSCO ANACONDA SITE

GNADENHUTTEN, OHIO

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NEWTOWN SQUARE, PENNSYLVANIA

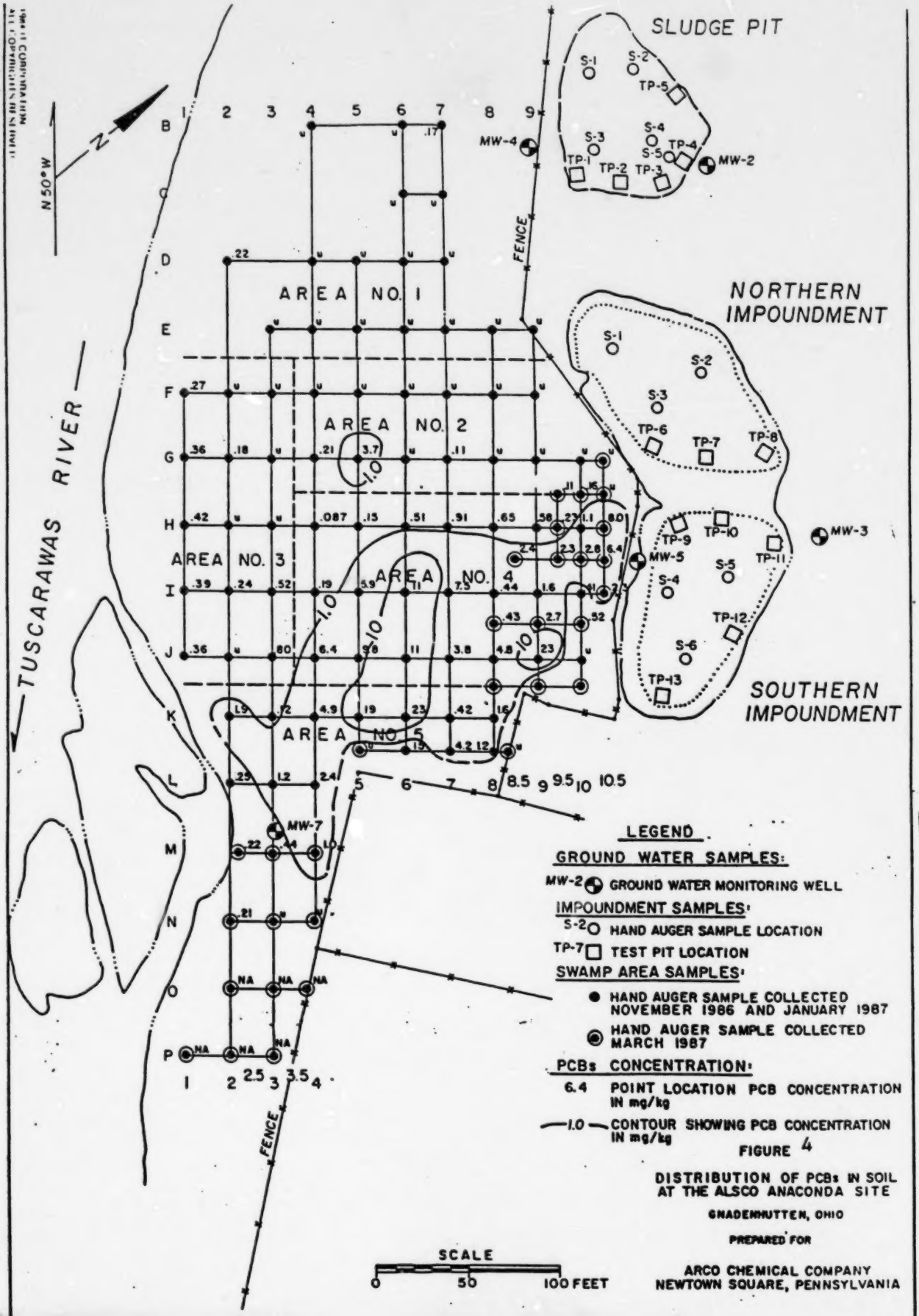

FIGURE 4

DISTRIBUTION OF PCBs IN SOIL AT THE ALSCO ANACONDA SITE

GNADENHUTTEN, OHIO

PREPARED FOR

ARCO CHEMICAL COMPANY
NEWTOWN SQUARE, PENNSYLVANIA

TABLE 1

RISK CHARACTERIZATION FOR NONCARCINOGENS IN SLUDGE AND SOIL

CONSTITUENT	MAXIMUM CONCENTRATION IN SLUDGE OR SOIL (mg/kg)	REFERENCE DOSE[b] (mg/kg/day)	CHILD HAZARD INDEX DERMAL	CHILD HAZARD INDEX INGESTION	ADULT HAZARD INDEX DERMAL	ADULT HAZARD INDEX INGESTION
INORGANIC						
Cadmium	6.8	2.9×10^{-4}	-[a]	1.34×10^{-3}	-[a]	2.72×10^{-3}
Chromium (total)	17,000	1.0×10^{0}	-	9.69×10^{-4}	-	1.97×10^{-3}
Chromium (hexavalent)	13	5.0×10^{-3}	-	1.48×10^{-4}	-	3.02×10^{-4}
Cyanide (total)	5,000	2.0×10^{-2}	-	1.4×10^{-2}	-	2.90×10^{-2}
Mercury	18	3.0×10^{-4}[c]	-	3.43×10^{-3}	-	6.96×10^{-3}
ORGANIC						
Volatiles						
Ethylbenzene	110	1.0×10^{-1}	3.00×10^{-4}	6.27×10^{-5}	6.11×10^{-4}	1.28×10^{-4}
2-Hexanone (butyl methyl ketone)	43	5.0×10^{-2}[c]	2.34×10^{-4}	4.9×10^{-5}	4.77×10^{-4}	9.98×10^{-5}
Tetrachloroethylene	0.28	2.0×10^{-2}	3.82×10^{-6}	7.89×10^{-7}	7.77×10^{-6}	1.62×10^{-6}
Toluene	5.3	3.0×10^{-1}	4.82×10^{-6}	1.01×10^{-6}	9.81×10^{-6}	2.05×10^{-6}
Xylenes, Total	410	1.0×10^{-2}	1.12×10^{-2}	2.34×10^{-3}	2.28×10^{-2}	4.76×10^{-3}
Acid/Base-Neutral Extractables						
Bis(2-ethylhexyl)phthalate	2.9	2.0×10^{-2}	3.95×10^{-5}	8.26×10^{-6}	8.05×10^{-5}	1.68×10^{-5}
Di-N-Butylphthalate	0.8	2.0×10^{-2}[d]	1.09×10^{-5}	2.28×10^{-6}	2.22×10^{-5}	4.64×10^{-6}
Fluoranthene	0.51	4.0×10^{-1}[e]	3.48×10^{-7}	7.27×10^{-8}	7.08×10^{-7}	1.48×10^{-7}
Isophorone	16	2.0×10^{-1}	2.18×10^{-5}	4.56×10^{-6}	4.44×10^{-5}	9.28×10^{-6}
Naphthalene	200	4.0×10^{-1}[e]	1.36×10^{-4}	2.85×10^{-5}	2.77×10^{-4}	5.8×10^{-5}
Phenanthrene	0.38	4.0×10^{-1}	2.59×10^{-7}	5.41×10^{-8}	5.27×10^{-7}	1.10×10^{-7}
Pyrene	0.66	4.0×10^{-1}	4.50×10^{-7}	9.40×10^{-8}	9.16×10^{-7}	1.91×10^{-7}
		Hazard Index Total	0.0344		0.0460	

[a]Dermal contact to inorganic contaminants not calculated.

[b]SPHEM, 1986b

[c]Reference dose, or Acceptable Intake for Chronic Exposure (AIC), for methyl ethyl ketone used.

[d]Reference dose for Bis (2-ethyl hexyl) phthalate used.

[e]Based on the unverified reference dose for Naphthalene. Integrated Risk Information System (IRIS) Office of Health and Environmental Assessment, U.S. Environmental Protection Agency, 1986.

TABLE 2

RISK CHARACTERIZATION FOR CARCINOGENS IN SLUDGE AND SOIL

CONSTITUENT	MAXIMUM CONCENTRATION IN SLUDGE OR SOIL (mg/kg)	CARCINOGENIC POTENCY FACTOR[a] $(mg/kg/day)^{-1}$	LIFETIME CANCER RISK[b] (CR) CHILD	LIFETIME CANCER RISK[b] (CR) ADULT	TOTAL LIFETIME CANCER RISK[e] CHILD	TOTAL LIFETIME CANCER RISK[e] ADULT
INORGANIC						
Arsenic	57	1.75	5.68×10^{-7}	1.16×10^{-6}		
PCBs	3,000	7.70	7.63×10^{-3}	1.55×10^{-2}		
	80.8[f]	7.70	2.06×10^{-4}	4.18×10^{-4}		
ORGANIC						
Bis(2-ethyl hexyl) phthalate	2.9	8.40×10^{-3}[c]	8.02×10^{-9}	1.63×10^{-8}		
N-Nitrosodiphenyl-amine	0.67	4.92×10^{-3}[d]	1.09×10^{-9}	2.21×10^{-9}		
Tetrachloroethylene	0.28	5.10×10^{-2}	4.71×10^{-9}	9.61×10^{-9}		
					7.63×10^{-3}	1.55×10^{-2}

[a] SPHEM, 1986

[b] Lifetime Cancer Risk (CR) = (Estimated Daily Intake [mg/kg/day]) (Carcinogenic Potency Factor $[mg/kg/day]^{-1}$). Estimated Daily Intake calculated for dermal and ingestion routes for all contaminants except arsenic. Ingestion route only calculated for arsenic.

[c] Toxicological Profile for Di(2-ethyl hexyl) phthalate, December 1987.

[d] U.S. EPA Health Assessment Document for Epichlorohydrin, 1983, U.S. EPA 600/8/83-032A.

[e] Total Lifetime Cancer Risk calculated using maximum contaminant concentration only.

[f] The average concentration calculated without using the maximum concentration of 3000 mg/kg.

TABLE 3

ALTERNATIVE 3
CAPITAL COST

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST ($)	TOTAL COST ($)
1	Excavation, Impoundment	CY	5,570	15	83,550
2	Borrow/Backfill/Compact, Impoundment	CY	5,570	14	77,980
3	Off-Site Landfill, Impoundment	CY	5,570	285	1,587,450
4	Excavation, Swamp	CY	3,300	25	82,500
5	Incineration, Hot Swamp (Includes Exc./Handling)	CY	50	1,200	60,000
6	Off-Site Landfill, Medium Swamp	CY	650	820	533,000
7	Off-Site Landfill, Low Swamp	CY	2,600	285	741,000
8	Seeding, Site	SY	8,900	0.60	5,340
9	Fence	FT	2,000	15	30,000
10	Engineering @ 15 percent Items 1 to 9	PERCENT	15	480,123	480,123
11	Contingency @ 15 percent Items 1 to 9	PERCENT	15	480,123	480,123
				TOTAL	4,161,066

APPENDIX A
RESPONSIVENESS SUMMARY

ALSCO ANACONDA SITE, GNADENHUTTEN, OHIO
RESPONSIVENESS SUMMARY

A. OVERVIEW

The U.S. Environmental Protection Agency (U.S. EPA) has gathered information on the nature and extent of contamination, evaluated remedial measures for source materials (contaminated sludge and soil), and recommended remedial actions for the source control operable unit at the Alsco Anaconda site. Public participation in Superfund projects is required in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Comments received from the public are considered in the selection for the site. This document summarizes the comments received regarding the proposed source control remedy and describes how they were incorporated into the decision making process.

During the public comment period, the U.S. EPA presented seven alternatives to address contaminated sludge and soil at the site. The U.S. EPA recommended Alternative 3, excavation and off-site incineration of swamp sludge highly contaminated with PCBs, excavation of settling basin, sludge pit, and remaining swamp sludge and soil and transportation off-site for treatment and disposal or reclamation/reuse, and backfilling the excavated settling basin and sludge pit with clean material, as the preferred alternative. The public comments received were generally supportive of U.S. EPA's recommendation.

The community relations responsiveness summary has the following sections:

- Background on Community Involvement and Concerns.
- Summary of Comments Received during Public Comment Period and Agency Responses.
- Remaining Concerns.

B. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

According to county officials during community interviews, citizens have accepted the Alsco plant as an integral part of the Gnadenhutten community. While residents closely follow news about the Alsco plant, county officials report they have received only infrequent inquiries and complaints about ongoing operations at the Alsco plant and the adjacent Superfund site. Several of the individuals interviewed for the preparation of the community relations plan suggested the reason so few complaints are lodged is because the Alsco plant is a major revenue source for Gnadenhutten's tax base and residents fear the plant would move if community attitudes were unsupportive of the plant operations. Written or vocal concern about the Alsco Anaconda site has been extremely limited to date.

The U.S. EPA distributed summary fact sheets providing background information on the Alsco Anaconda site and the administrative order between U.S. EPA, Ohio EPA, and ARCO in February 1987. The Remedial Investigation (RI) and

Focused Feasibility Study (FFS) reports and Proposed Plan for the Alsco Anaconda site were released to the public in June 1989. These documents were made available to the public in both the administrative record and an information repository maintained at the U.S. EPA offices in Region V and at the Gnadenhutten Public Library. Summary fact sheets describing the results of the RI were distributed in May 1989. A fact sheet about the FFS and Proposed Plan was released in June 1989.

The notice of availability of site related documents and announcement of a public comment period and public meeting was published in the local newspaper. In July, residents attended a public meeting held in Gnadenhutten. At this meeting, representatives from the U.S. EPA and OEPA answered questions about problems at the site and the remedial alternatives under consideration.

C. SUMMARY OF COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

This responsiveness summary addresses oral and written comments received by the U.S. EPA concerning the RI, FFS, and Proposed Plan for the Alsco Anaconda site. The comment period was held from June 26, 1989 to July 25, 1989. A public meeting was held July 11, 1989 in Gnadenhutten to allow the public an opportunity to present oral and written comments.

Public Comments Received and U.S. EPA Responses

1. Mr. Charles Miller commented he did not have the technical expertise to judge or comment on the alternatives presented, and would have to go with the trained professional's opinion for the site cleanup. He expressed interest in implementing the best, most economical way of handling pollution at the site.

   U.S. EPA response: U.S. EPA is also interested in implementing the best remedy for the site. Several factors are taken into consideration when selecting a cleanup alternative, such as protection of human health and the environment; effectiveness; reduction in toxicity, mobility, or volume; implementability; compliance with federal, state, and local environmental laws and regulations; cost; and acceptance by the community and the State. Alternative 3 provides the best balance among these criteria.

2. Mr. Ted Martin recommended Alternative 3 or 4 be executed at the site. He indicated Alternative 4 may be more complete, more material is treated through incineration, but Alternative 3 would probably be ideal as far as money was concerned.

   U.S. EPA's Response: As mentioned in the response above, the U.S. EPA uses nine balancing criteria in selecting the best cleanup remedy for a site. U.S. EPA does recognize that Alternative 4 will yield a greater reduction of toxicity than Alternative 3, but believes Alternative 3 provides the best balance among the criteria by using a different, less expensive, form of treatment.

3. Mrs. Dorothy Shull questioned the quality of the drinking water in her neighborhood, a group of homes with private wells located approximately three quarters of a mile southwest of the site across the river. She also indicated a desire to have the Tuscarawas River cleaned up, expressing concern that chemicals have caused the river to have a terrible color.

U.S. EPA's Response: More ground water and river sediment work is going to take place in the next phase of investigation. A determination will be made if contaminated ground water underneath the site is discharging completely to the river, or if some portion of the ground water is traveling beneath the river towards the wells in question. The quality of the ground water at the exposure points will then be evaluated. No residential well sampling is planned at this time, as the data suggest contaminants from the Alsco site have not reached residential wells.

This action pertains only to the 4.8-acre Alsco Anaconda site formerly used for sludge disposal, and not the ongoing operations of the Alsco plant. The plant is currently permitted to discharge wastewater to the Tuscarawas River. U.S. EPA will investigate and evaluate the impact of the former sludge disposal area on the river and ground water, taking action if necessary to protect human health and the environment.

Ohio EPA Comments Received and U.S. EPA Responses

1. Ohio EPA believes Alternative 4 is more protective than Alternative 3, because all of the PCB contaminated swamp sludge will be incinerated before landfilling (if landfilling, as opposed to reclamation/reuse, is the selected disposal option). While Alternative 4 does not significantly reduce the volume of the waste as compared to Alternative 3, it does provide the greatest reduction in toxicity by destruction of the PCB material.

U.S. EPA's Response: U.S. EPA contends Alternative 3 is just as protective of human health and the environment as Alternative 4 because both alternatives will achieve the same remedial action goals of preventing exposure to contaminants in excess of established standards, reference doses for noncarcinogens, and/or total excess cancer risk of 1×10^{-6}.

U.S. EPA does recognize that Alternative 4 will yield a greater reduction in toxicity than Alternative 3, but believes Alternative 3 provides the best balance among the criteria used for evaluation. U.S. EPA would not take exception to another party, a potentially responsible party (PRP), for example, taking on additional expense to perform the incineration treatment described in Alternative 4 as long as it is approved by U.S. EPA.

2. Alternative 3 would be improved by incinerating the swamp sludge containing PCBs over 25 parts per million (ppm) (approximately 1200 cubic yards). PCB levels in the sludge appear to drop off significantly after 25 ppm (i.e. the sludge contaminated with PCBs in excess of 25 ppm is in a well defined area, with adjacent levels dropping off rapidly to less than 5 ppm).

U.S. EPA's Response: U.S. EPA agrees that Alternative 3 would be improved by incinerating the swamp sludge containing over 25 ppm. However, U.S. EPA does not agree Alternative 3 should be changed to require such incineration given the per unit cost, the related waste handling issues associated with incineration of 1,200 cubic yards of material, and the marginal benefit of additional incineration. Alternative 3 already requires PCBs over 25 ppm are to be excavated and removed from the site. If PCBs are present in the F019 contaminated sludge and soil, they may be treated prior to further disposal since the F019 sludge and soil must meet the RCRA land ban treatment requirements. If the PCBs are segregated from other treated sludge and soil then they must be handled and disposed consistent with the identified applicable or relevant and appropriate requirements (ARARs). The ARARs are designed to ensure any further treatment, storage or disposal of the PCBs occurs in a manner which protects public health and the environment. Finally, it should be noted that OEPA as a party to the RI/FFS administrative order had a significant role in the development of the FFS. The alternatives for the site were developed with input and approval from the OEPA. Alternative 3 was developed in a way that previously met both agencies approval. Given OEPA's past participation and approval, U.S. EPA believes OEPA has not adequately demonstrated the need to change Alternative 3.

3. It is Ohio EPA's preliminary determination that the swamp area is a wetland area as defined in the U.S. Department of the Interior's "Classification of Wetlands and Deepwater Habitats of the U.S." In addition to the remedial action goals presented in the FFS, the classification of the swamp area must be determined. Based upon this determination, protective cleanup levels for PCBs and F019 waste must be developed. If aquatic and food-chain based levels cannot be developed, then the cleanup levels should meet background conditions.

U.S. EPA's Response: Based on the information submitted by OEPA, U.S. EPA disagrees the area commonly referred to as the "swamp" is a wetland area. The document OEPA refers to does not classify this area as a wetland and is not a current source to be used in a wetland determination. To determine whether an area is a wetland the appropriate sources are the definition of a wetland contained in 40 CFR 230.3 and the Federal Interagency Committee for Wetland Delineation, 1989, "Federal Manual for Identification and Delineation of Jurisdictional Wetlands." Both sources require the following three elements to be present before an area can be considered a jurisdictional wetland: 1) hydrophytic vegetation that is dominant in the area; 2) hydric soils; and 3) wetland hydrology (i.e., presence of water for a week or more during the growing season). OEPA

has not submitted any information demonstrating that the "swamp" area satisfies all three of these criteria. The information U.S. EPA has indicates the area does not have the necessary wetland hydrology nor soil characteristics. The area has been predominantly dry since the wastewater discharges were directed away from the area in 1986. Furthermore, U.S. EPA is not aware of the presence of water in the area for a week or more during the growing season.

Even if the "swamp" was considered a wetland there is no support for requiring a more "protective" cleanup level for this operable unit remedial action. There is no State or Federal rule which specifies the degree of cleanup as a concentration level that must be attained. Section 121(d) of CERCLA does require a degree of cleanup which protects human health and the environment. The Summary of Site Risks Section of the Record of Decision (ROD) for this operable unit indicates the PCBs and F019 contaminated sludge and soil will be excavated and removed to a depth which protects human health and the environment. In particular, the primary contaminant pathways, dermal contact and ingestion, will be eliminated by removing the sludge and contaminated soil to a depth which ensures carcinogenic levels of pollutants below 1×10^{-6} cumulative excess cancer risk and noncarcinogenic pollutants below a cumulative HI value of one for critical effect. The carcinogenic and noncarcinogenic levels are based on epidemiological and animal studies. If additional studies warrant a more stringent cleanup stantard, it will be evaluated. Furthermore, contact with contaminated ground water will not occur because it is not anticipated that the excavated area will intersect the ground water table, and the area will be recontoured and vegetated after excavation. The risks to human health and the environment associated with the contaminated ground water will be assessed as part of the Phase II ground and surface water RI/FFS.

4. The Proposed Plan should specify clean-up criteria will not exceed a 1×10^{-6} cumulative excess cancer risk level for carcinogens, and will not exceed a hazard index of one for non-carcinogens.

U.S. EPA's Response: The Proposed Plan states on page 8 the specific cleanup goals for the Alsco Anaconda site: risk due to direct contact is reduced to less than established standards, cumulative excess cancer risk levels less than 1×10^{-6}, and less than reference doses for noncarcinogens. The cleanup goal for noncarcinogens in the ROD was changed to be less than a cumulative HI value of one for critical effect.

For noncarcinogens, any single chemical with an exposure level greater than the reference level will cause the hazard index to exceed unity. For multiple chemical exposures, the hazard index may exceed one even if no single chemical exceeds its acceptable level. The assumption of additivity reflected in calculating a single hazard index for all noncarcinogens is most properly applied to compounds that induce the same effect by the same mechanism. Consequently, applying this equation to a mixture of compounds not expected to induce the same

type of effects could overestimate the potential for effects. If the hazard index results in a value greater than one, the compounds in the mixture will be segregated by critical effect, and separate hazard indices for each effect will be derived. The total hazard indices calculated for the Alsco Anaconda site are well below unity. If the hazard index for an effect exceeds unity, the cleanup action will, if appropriate, remove hazardous substances to the reduce the hazard index to less than one.

PRP Comments Received and U.S. EPA Responses

1. Atlantic Richfield Company (ARCO) supports U.S. EPA's recommended cleanup remedy (Alternative 3) for the following reasons: it is protective, effective and permanent, not difficult to implement, uses treatment technologies, and would remove waste materials from the 100-year flood plain.

   U.S. EPA's Response: U.S. EPA acknowledges this support.

D. REMAINING CONCERNS

Issues and concerns raised during the public meeting about remedial action activities include the following:

- What if buried drums containing waste were discovered during remedial action ?

  U.S. EPA has investigated the possibility of buried drums at the site during RI activities, and no drums were discovered. A geophysical technique for sensing buried wastes will probably be used at the site before excavation begins to confirm the presence or absence of buried drums. If drums containing waste are discovered, they will be handled in a way which meets the site cleanup goals and all state and federal rules.

- Will the waste materials be transported off-site safely?

  U.S. EPA will ensure the material is moved off-site in a way which is safe to workers and the community with a minimal impact on the community. Trucks will be covered and prepared to prevent leaking, or waste will be contained in drums at the site and then transported off-site. A site specific health and safety plan will be developed and implemented. Transportation off-site must also comply with U.S. EPA's and U.S. Department of Transportation's hazardous waste transportation regulations.

APPENDIX B
ADMINISTRATIVE RECORD INDEX

ADMINISTRATIVE RECORD INDEX
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	2	86/09/18	Letter as follow-up to 9/8/86 letter, confirming plan of action for well sampling (with attachment)	R.L.Sloan,ARCO	P.LeBlanc,USEPA	Correspondence	1
	1	87/02/03	Letter stating that the Consent Order for conducting an RI/FS at Arco's Alsco Anaconda facility has been signed by the Regional Administrator, and the Order will be made available to the public for a 30-day review and comment period	J.Paletto,USEPA Asst. Regional Counsel	J.Tiell,Esq., OEPA	Correspondence	2
	1	87/02/03	Letter stating that the Consent Order has been signed, and the Deputy Regional Administrator finds that Arco is qualified to conduct the RI/FS	J.Paletto,USEPA Asst. Regional Counsel	V.Wynne,Atlantic Rich.Co.	Correspondence	3
	1	87/03/23	Letter stating that the Consent Order was made available to the public and comment period began on 2/4/87; constituting written notification of USEPA's determination that the present Consent Order will be made effective	R.Schaefer,Regional Counsel, USEPA	V.Wynne,Esq.	Correspondence	4
	2	87/03/26	Letter stating that on 1/26/87, USEPA entered into an Admin. Order by Consent, summarizing section 121 of SARA, notifying recipient that further contact will be made re: SARA requirements for the RI/FS Work	B.Constantelos,USEPA	R.Sloan,ARCO Co.	Correspondence	5

ADMINISTRATIVE RECORD INDEX
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	1	88/10/21	Letter re:FS Work Plan, requesting an extension 'til 11/15/88 to submit the FS Work Plan	J.Franz,ARCO	D.Malley	Correspondence	6
	1	88/10/26	Follow-up letter to 10/21/88 ltr, stating that USEPA will grant extension, but 10/7/88 deadline for submittal of Work Plan was unmet	D.Malley,USEPA	J.Franz,ARCO	Correspondence	7
	2	88/10/28	Letter re:final review comments pertaining to RI report of May 1988	D.Malley,USEPA	J.Franz,ARCO	Correspondence	8
	4	87/02/00	USEPA Fact Sheet	USEPA		Fact Sheets	9
	2	86/04/07	ACTION MEMORANDUM	B.Constantelos, signed by V.Adamkus, USEPA		Memorandum	10
	44	86/05/19	Memo re:Data Assessment for Alsco Gnadenhutten Plant,Ohio Remedial Investigation (with attachments)	J.Adams,Chief, QA Office C.Ross,Director,Central Regional Laboratory (USEPA)	M.Niedergang,USEPA	Memorandum	11
	1	87/03/12	Memo re:Public comment period on Alsco Anaconda RI/FS consent order	M.McCue,Community Relations Coordinator,USEPA	File	Memorandum	12
	14	76/05/27	OEPA Authorization to Discharge Under the National Pollutant Discharge Elimination System (For Alsco Anaconda,Inc.)	M.Williams,Director OEPA		Permits	13
	16	84/12/27	OEPA Authorization to Discharge Under the National Pollutant Discharge Elimination System (For Arco Metals Co.)	S.Grossman,Asst.Director OEPA		Permits	14
	3	84/12/28	Director's Final Findings and Orders (2 attachments)	OEPA		Pleadings/Orders	15

ADMINISTRATIVE RECORD INDEX
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	39	87/01/26	Administrative Order by Consent	USEPA and OEPA (V.Adamkus,USEPA)		Pleadings/Orders	16
	2	87/02/04	Press Release "USEPA SEEKS PUBLIC COMMENT ON ALSCO ANACONDA SITE INVESTIGATION"	USEPA		Press Release	17
	17	00/00/00	Alsco Anaconda RI/FS Statement of Work	USEPA		Reports/Studies	18
	29	85/01/11	Health and Safety Plan RI/FS Alsco Anaconda	IT Corporation	USEPA	Reports/Studies	19
	84	86/06/00	Response to the EPA Data Assessment for Remedial Investigation	IT Corporation	USEPA	Reports/Studies	20
	301	86/10/31	Quality Assurance Project Plan - RevisionIII (Revision 0 dtd 1/85, RevisionI dtd 5/85, RevisionII dtd 7/86)	IT Corporation	USEPA	Reports/Studies	21
	19	86/12/08	TES IV Report on Field Activities at Alsco Anaconda Site 11/12/86-12/5/86	Jacobs Engineering	USEPA	Reports/Studies	22
	18	87/02/13	Final Community Relations Plan	Camp,Dresser,McKee(CDM)	USEPA	Reports/Studies	23

GUIDANCE DOCUMENTS INDEX
ALSCO ANACONDA SITE-GNADENHUTTEN, OHIO
Guidance Documents are available for review at
USEPA Region V-Chicago IL

TITLE	AUTHOR	DATE
Remedial Action Objectives	USEPA	00/00/00
Community Relations Activities at Superfund Enforcement Sites		85/03/22
Federal Lead Remedial Project Management Manual	OSWER Dir.9355.1-01	86/12/00
Interim Guidance: Streamlining the CERCLA Settlement Decision Process	OSWER Dir.9835.4	87/02/12
Superfund Public Health Evaluation Manual	OSWER Dir.9285.4-01	87/07/00
Memo re:PCB Contamination--Regulatory and Policy Background	B.Hanson,USEPA	87/09/10
Interim Guidance on Administrative Records for Decisions on Selection of CERCLA Response Actions	OSWER Dir.9833.4	87/11/09
Transmittal letter for Applicable or Relevant and Appropriate State Requirements(ARARs) for any remedial action undertaken at Alsco Anaconda Site	S.Poorman,OEPA	87/11/24
Draft Guidance on Preparing Superfund Decision Documents:The Proposed Plan and ROD	OSWER Dir.9355.3-02	88/03/00
Draft Guidance on PRP Participation in the RI/FS	OSWER Dir.9835.1A	88/04/00

ADMINISTRATIVE RECORD INDEX:UPDATE #1
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	14	87/11/24	Letter listing ARARs for any remedial action which may be taken at Alsco Anaconda site (pertinent statutes and regulations cited are attached)	S.Poorman,OEPA	P.LeBlanc,USEPA	Correspondence	
	2	88/11/22	Letter giving compilation of USEPA and OEPA comments on FS work plan of 10/88, stating comments must be addressed before approval	D.Mally,USEPA	J.O'Brien,ARCO	Correspondence	
	1	88/12/20	Letter stating that FS Work Plan dated 12/88 is approved by USEPA as of 12/20/88, assuming minor changes listed are made	D.Mally,USEPA	T.McLane,ARCO	Correspondence	
	2	89/01/06	Letter summarizing agreements made at 12/1/88 meeting concerning Alsco Anaconda Site	D.Mally,USEPA	T.McLane,ARCO	Correspondence	
	2	89/01/18	Letter expressing concern about progress ARCO has made on RI/FS as agreed to in the Administrative Order by Consent	B.Constantelos,USEPA	W.Leake,ARCO	Correspondence	
	2	89/02/16	Letters stating USEPA is mandated to comply with all Federal and State ARARs, requesting comments on ARAR package within 30 days of receipt of letter	M.Gade,B.Constantelos-USEPA	M.Walsh,R.Shank-OEPA	Correspondence	
	2	89/03/01	Letter in response to request for comments on compliance with ARARs	K.Kroeneneyer,US Dept. of Interior(DOI)	D.Mally,USEPA	Correspondence	
	2	89/03/13	Letter re:Securing of NPL Site, with attachment	T.McLane,ARCO	D.Mally,USEPA	Correspondence	

ADMINISTRATIVE RECORD INDEX:UPDATE #1
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
			illustrating location of additional fence				
	13	89/03/16	Transmittal letter with Ohio's ARARs for the Alsco Anaconda site	J.Rochotte,OEPA	D.Mally,USEPA	Correspondence	
	2	89/03/16	Letter re:Debris Removal at Alsco Anaconda,with attachment	T.McLane,ARCO	D.Mally,USEPA	Correspondence	
	1	89/04/07	Response to ltrs. dated 3/13 and 3/16/89; stating that no objections exist to ARCO proceeding with fencing to secure the site or proposed debris renoval and storage, as such actions are considered interim response and not remedial actions	D.Mally,USEPA	T.McLane,ARCO	Correspondence	
	25	89/02/08	Memo re:Compliance with ARARs for Remedial Actions at Alsco Anaconda NPL Site,Gnadenhutten, OH (site history/background, site characterization, screened remedial technologies, and ARARs identified by contractor attached)	D.Mally,USEPA	Addressees	Memorandum	
	2	89/02/28	Memo re:Response to ARARs for Alsco Anaconda, with comments attached	S.Rothblatt,USEPA	D.Mally,USEPA	Memorandum	
	1	89/03/02	Memo commenting on ARAR request package	D.Spencer,USEPA	D.Mally,USEPA	Memorandum	
	7	89/03/11	Memo re:Request for ARARs for Alsco Anaconda Superfund Site, with	K.Penner,USEPA	J.Garl,USEPA	Memorandum	

8	85/03/29	Transmittal letter with Addendum 1, Modifications and Clarifications to RI	IT Corporation	USEPA	Reports/Studies	

ADMINISTRATIVE RECORD INDEX:UPDATE #1
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
			Work Plan, Revision 1				
	17	86/08/07	Transmittal letter with Addendum II, Modifications and Clarifications to RI Work Plan, Revision 1	IT Corporation	USEPA	Reports/Studies	
	87	88/12/00	FS Work Plan	IT Corporation	Atlantic Richfield Co.	Reports/Studies	
	6	89/01/25	Preliminary Health Assessment	ATSDR,US Public Health Service	USEPA	Reports/Studies	

ADMINISTRATIVE RECORD SAMPLING/DATA INDEX:UPDATE #1
ALSCO ANACONDA SITE, GNADENHUTTEN OH
DOCUMENTS NOT COPIED, MAY BE REVIEWED AT THE
USEPA REGION V OFFICES, CHICAGO, ILLINOIS.

DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE
87/01/23	Review of Region V CLP Data Received for Review on 1/21/87	C.Ross,Central Regional Laboratory	P.LeBlanc,USEPA	Sampling/Data
87/01/27	Review of Region V CLP Data Received for Review on 1/21/87	C.Ross,Central Regional Laboratory	P.LeBlanc,USEPA	Sampling/Data
87/01/29	Review of Region V CLP Data Received for Review on 1/27/87	C.Ross,Central Regional Laboratory	P.LeBlanc,USEPA	Sampling/Data
87/03/04	Review of Region V CLP Data Received for Review on 1/21/87	C.Ross,Central Regional Laboratory	P.LeBlanc,USEPA	Sampling/Data

ADMINISTRATIVE RECORD INDEX:UPDATE #2
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	4	88/03/07	Transmittal letter with USEPA and OEPA comments on RI Report	S.Poorman,OEPA/ A.Kleinrath,USEPA	R.Sloan,Alsco Chemical	Correspondence	1
	5	89/04/27	Letter re:Alsco Anaconda Detailed Analysis of Alternatives, RI Revisions. with attachment	J.Rochotte,OEPA	D.Nally,USEPA	Correspondence	2
	4	89/05/16	Transmittal letter with OEPA's comments on Draft FS	J.Rochotte,OEPA	D.Nally,USEPA	Correspondence	3
	11	89/05/17	Transmittal letter with USEPA and OEPA comments on FS,requesting that these comments be incorporated in the next submittal of the FS	D.Nally,USEPA	T.McLane,ARCO	Correspondence	4
	4	89/06/14	Letter stating that USEPA decided to postpone the decision on groundwater remedial action selection until questions as to the exact nature and extent of contamination are resolved;portions of RI listed are approved and are adequate to allow selection of remedial action	D.Nally,USEPA	T.McLane,ARCO	Correspondence	5
	1	89/06/30	Letter re:State of Ohio's part in Consent Decree Negotiations	R.Clarizio,USEPA	C.Hafner,OEPA	Correspondence	6
	6	89/05/00	Fact Sheet:"USEPA Releases Alsco Anaconda Pollution Report"	USEPA		Fact Sheet	7
	6	89/06/00	Fact Sheet:"USEPA	USEPA		Fact Sheet	8

ADMINISTRATIVE RECORD INDEX:UPDATE #2
ALSCO ANACONDA SITE
GNADENHUTTEN, OHIO

FICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
			Proposes Cleanup Plan for Alsco Anaconda"				
	1	89/05/26	Memo re:proposed plan for Alsco Anaconda stating that a decision was made to address only the source material at the site,subsequent to the draft FS release	D.Mally,USEPA	Addressees	Memorandum	9
	1	89/07/14	Memo re:conference call with OEPA on Alsco ARARs	R.Clarizio,USEPA	File	Memorandum	10
	14	00/00/00	Proposed Plan	USEPA		Reports/Studies	11
	18	87/02/28	Community Relations Plan	CDM	USEPA	Reports/Studies	12
	21	88/05/00	Response to USEPA and OEPA review comments RI Report, prepared for ARCO Chemical	IT Corporation	USEPA	Reports/Studies	13
	416	89/01/00	RI Report,prepared for Atlantic Richfield Co.	IT Corporation	USEPA	Reports/Studies	14
	242	89/06/00	Focused Feasibility Study Report,prepared for Atlantic Richfield Co.	IT Corporation	USEPA	Reports/Studies	15

GUIDANCE DOCUMENTS INDEX:UPDATE #2
ALSCO ANACONDA SITE-GNADENHUTTEN, OHIO
Guidance Documents are available for review at
USEPA Region V-Chicago IL

TITLE	AUTHOR	DATE
Guidance Document for Cleanup of Surface Impoundment Sites	USEPA OSWER Dir.9380.0-6	86/06/00
Interim Guidance on Compliance with ARAR Requirements	USEPA OSWER Dir.9234.0-05	87/07/09
Surface Impoundment Clean Closure Guidance Manual, prepared by CH2M Hill	USEPA OSWER Dir.9476.00-8.C	87/10/12
CERCLA Compliance with Other Laws - Manual	OSWER Dir.9234.1-01	88/05/06
Memo re:Draft Working Paper on the Approach to Addressing PCB Contamination at Superfund Sites	B.Hanson,USEPA	88/09/29
Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites	USEPA OSWER Dir.9283.1-2	88/12/00
Interim Guidance on Administrative Record for Selection of Response Actions	USEPA OSWER Dir.9833.3A	89/03/01
Memo re:PCB Contamination at Superfund Sites	B.Hanson,USEPA	89/04/07
Land Disposal Restrictions as Relevant and Appropriate Requirements for CERCLA contaminated soil and debris	USEPA OSWER Dir.9347.2-01	89/06/05

ADMINISTRATIVE RECORD INDEX:UPDATE #3
ALSCO ANACONDA SITE
GRADENHUTTEN, OHIO

ICHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
	1	89/07/17	Letter re:Alsco Anaconda Consent Decree	C.Hafner,OEPA	R.Clarizio,USEPA	Correspondence	
	5	89/07/19	General Notice Letter	M.Heidergang,USEPA	Harvard Industries,Inc.	Correspondence	
	3	89/07/25	Letter providing OEPA's approval of Focused Feasibility Study,sections of the RI,and commenting on the proposed plan	J.Rochotte,OEPA	D.Nally,USEPA	Correspondence	
	56	89/07/11	Public Meeting Notes	C.McArdle,Steno-graphic Reporter and Notary Public for State of Ohio		Meeting Notes	
	1	89/07/18	Memo re:Response to OEPA's comments on Alsco Anaconda Draft FS	D.Nally,USEPA	File	Memorandum	
	1	89/07/00	Notice that USEPA is accepting Public Comments on Proposed Cleanup Plan for Alsco Anaconda; public meeting to be held 7/11/89	USEPA	interested parties	Other	